

"A phone call" to the community of mathematics

(digest from:les-mathematiques.net)



In trying to be as systematic as possible, I propose to study mathematically how "elements" and "groupings of elements" can come into contact and exchange, even create, information; and under all kinds of conditions, possibly minimal.

This also leads to consider the elements between them and the groupings between them. An important but auxiliary questions is the formation of these elements and groupings; their delimitation.

I am convinced that a systematic study by mathematicians would bring a lot to other sciences.

Thank you.

Jean Yves T

My response :

The question of this thread is too general.

But let's try to reformulate this question without pushing the abstraction too far:

Let **E** be the set of these elements.

Let **R0** be the set of binary relations defined on this set, nothing nasty just all the relations that could have two elements of this set, if we add the transitivity to a relation of R0 we have a (of R0) b and b(of R0) c gives a (of R0) c: we can "connect" all the elements that independently exchange this "something" even indirectly.

Now for the regrouping of elements it would be necessary to extend the notion of binary relation, a strategy would be to know the groupings and to define a relation between any element and the set of all the groupings.

Example for the groupings of two elements, define R_1 as the set of relations between an element of E and the set of groupings with two elements.

The idea is: to define the broadest groupings (visualize this as a construction site or say 100 craftsmen build a palace ..) and see them just as 'opaque' sets.

The set of binary relations on the largest groupings $R_\$$ defined, now I do not know if that's done but it will take (open) these 'big' sets and review them as smaller groupings, then define binary relationships between our item and those smaller sets and so on until we get to the smaller ones by coming back as far as possible if we're lucky we'll go back to R_0 .

If this route is possible we can 'dodge' the use of n-ary relations by making binary relations between these "opaque" sets.

Citation :

God ?

Of course, nature is much more malicious and will not let you down and you will only see a thick haze, it's like you want to see a consciousness in a network of neurons ...? But you might see some interesting things that will make your biologist friends jump around.

Reply;

Deux notions manquent :
Ce qui pourrait guider les regroupements.
Et, de quelle manière ils s'expriment.

JYT

My response:

Why not see the elements of **E** as players each optimizing their "**strategy**"?

Reply;

"Players optimizing their strategy", but how would these players be concerned by this game knowing that they operate at a very basic level of formalization?

JYT

My response:

To answer you, Mr. JYT, I made an example:

Let's say we start suspending strings in a kind of box, now suppose that all the strings touch at least once.

If one were to "vibrate" a string, good physical sense would say that the "nature" would dilute this energy as quickly as possible, each string will have the optimal response in this game where the goal is "dilute the energy fast, otherwise we'll all die ..."

Now, we could see each molecule of string as a player whose only strategy is to change its position in space.

At an elementary level, each string "draws" in a set of functions its form at every moment.

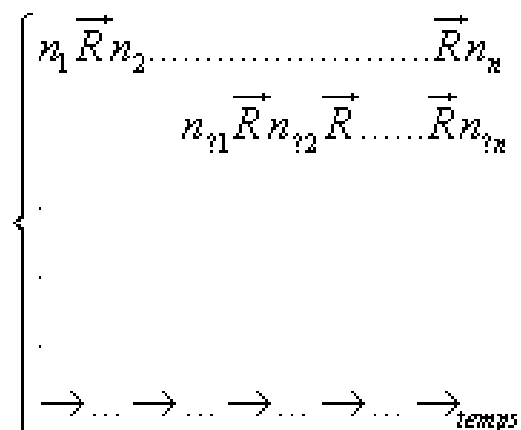
At the global level, we observe the principle of less action ...

And this optimal strategy is exactly what the mathematician calls Nash equilibrium.

In the game of strings, molecules play the game and realize at every moment this balance, of course!

Back to the brain, to accomplish a task, several nerve impulses spread there.

If one could follow all these nerve impulses with respect to time one could obtain a formal writing in this form:



where R is: n_1 fires on n_2 , each line represents a succession of direct shots from one neuron to another.

The single-line writing of this system in terms of R's abstract relationships is how the brain performs the task.

In this video shots, we see neurons being shot, I tend to believe that each "flash" represents a term of writing in a line.

(Update: some 6 months later after these posts these exact "flashes" were observed experimentally by a Japanese research unit called OIST)

Example:

If moving the finger corresponds "locally" to a muscle that contracts, all that has been done in the brain just before is that "Nash equilibrium" neurons replaying a spaghetti western to create this muscular signal.

Goodbye.

